USGS

WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2003PA14B

Title: Spruce Creek Watershed Keystone Project

Project Type: Education

Focus Categories: Management and Planning, Water Quality, Education

Keywords: education, management, non point source pollution, planning trout fishery, water quality, watershed stewardship

Start Date: 03/01/2003

End Date: 02/29/2004

Federal Funds Requested: $14914.00

Matching Funds: $42833.00

Congressional District: 5th of PA

Principal Investigators: Sherwin, Lysle S.

Abstract: This proposal seeks support for a graduate assistant working with an interdisciplinary team of graduate students and faculty engaged in a watershed assessment and planning practicum (Keystone Project) in the Spruce Creek watershed of the Little Juniata River, Pennsylvania. Through participation in a watershed case problem, the students will develop competence in scientific data collection techniques and problem analysis tools directed at quantifying, analyzing, and ultimately mitigating widespread types of polluted runoff. The Keystone Project will also afford the graduate assistant an enhanced education in community-based, team-oriented watershed management and will provide outreach to the host watershed community. The project itself will address water quality issues in Spruce Creek, a high quality trout stream threatened by land development, agricultural enterprises, and in-stream flow reductions from groundwater withdrawals. The entire Spruce Creek watershed is designated as a High Quality-Cold Water Fishery by the PADEP Chapter 93 Water Quality Standards. However, a major tributary was recently listed as impaired for suspended solids by the PADEP 303(d) list, attributable to agriculture and land development activities. Watershed stakeholders are concerned that other stream segments may be impaired, and there are emerging problems with inadequate treatment of sewage effluent from on-lot systems. Data on stream flow and water chemistry are insufficient to calculate pollutant loadings as the

baseline to determine appropriate reductions needed to achieve water quality standards and protect designated uses.

Project Objectives
a) Conduct an assessment of biophysical and cultural factors in the watershed related to protection and restoration of water quality to support designated uses and progressive land use.
b) Analyze assessment data to identify problems and opportunities and engage a broad base of stakeholders in developing shared watershed restoration and protection goals.
c) Produce a watershed stewardship plan responsive to those goals and that incorporates implementable recommendations and strategies for cooperative action. A model Total Maximum Daily Load (TMDL) would be prepared for the impaired reach of Halfmoon Creek.

Methods
Water samples will be collected at five stations on Halfmoon Creek - three within the impaired reach, one upstream of the impaired reach, and one reference station in the upper watershed. Samples will also be collected at stations on Spruce Creek above and below the confluence with Halfmoon Creek. Analysis will be done for total suspended solids, total nitrogen, and total phosphorus. Runoff event samples will also be collected randomly through project period. Measurement of stream flow will be done concurrently using portable current meters. Pennsylvania Spatial Data land cover and other data will be retrieved and clipped using Arc-View GIS. The Keystone team and the research assistant will be engaged in organizing a series of community stakeholder input meetings. A day-long watershed planning workshop of experts will be convened in Spring 2004 to review and critique the proposed pollution abatement recommendations developed by the student team and to develop strategies for implementation of management practices. These recommendations would be presented at a public forum at the completion of the Keystone Project in April 2004. The graduate research assistant funded by this proposed grant would have lead responsibility of communicating the data findings and the analysis to layperson and technical audiences at the various forums and workshop and in direct meetings with private landowners and representatives of collaborating agencies involved in implementation of watershed restoration practices.
